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12 November 1980

# Near East/North Africa Report

No. 2217

EGYPT: HOUSING SITUATION  
AND CONFRONTING ITS PROBLEMS



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### EGYPT: HOUSING SITUATION AND CONFRONTING ITS PROBLEMS

[Excerpt of report published as a supplement to 1 Feb 80 edition of AL-AHRAM AL-IQTISADI]

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## Introduction

The challenges that have faced Egypt in its performance of its leadership role in the Arab causes in particular and the African and international causes in general have had a big impact on Egypt's low economic growth rates and on its inability to maintain a proper standard of services.

This is why housing has not received its due share of attention--a lack of attention that has ultimately led to the deterioration of the housing problem to the degree which makes this problem hold at present the second highest priority in the state's national interests after securing food.

Out of our faith in man and of his being the goal of every growth and the means for realizing this growth, the government believes that housing constitutes an economic and social necessity and an important element for creating a consolidated society and a healthy social atmosphere characterized by stability and providing the suitable circumstances for production and for development activity.

Now that God has given our inspired President Muhammad Anwar al-Sadat success in establishing peace that heralds a new era in our nation's life--an era over which prosperity prevails and in which each citizen aspires rightfully to realize his long-sought wishes, including the wish of having proper and healthy housing--there is no doubt that the task of providing such housing is not confined to one agency and not another. All of society's efforts, including the efforts of this society's various public and private sectors, must act in solidarity to realize this goal.

In implementation of the instructions of his excellency the president of the republic in this regard, Prime Minister Dr Mustafa Khalil has issued a decision forming a national committee to study the roots of the problem and to propose the national policy capable of confronting it according to sound scientific approaches.

To realize this, the committee held successive meetings throughout a period of 4 months during which it studied the national housing strategy on whose basis the special policies for every aspect of the problem are founded.

In view of the fact that the problem under study is a national problem that is closely linked to all the political, economic and social spheres, it was deemed fit to form eight working teams, each entrusted with one aspect of the problem. These teams carried out detailed studies which were presented to the national committee. After studying all the reports, the committee ended up with the conclusions contained in the proposed national housing plan.

It pleases me on this occasion to laud the great efforts exerted by the chairman and members of the main committee and of the subsidiary working teams who were comprised of a select group of specialized public figures with broad experience and high qualifications. Were it not for the vast efforts they have exerted, it would not have been possible to draw up the draft plan in this manner and in such a short time.

In conclusion, I hope that the proposed plan will receive the approval of all the state's executive and popular agencies and that it will be put into implementation as soon as possible so as to realize our people's aspirations for a better life.

God is the giver of all success.

Engineer Mustafa al-Hifnawi  
Minister of Housing

## Chapter One: Familiarization With Problem

### 1-1 Introduction

1-1-1: The houses and residential centers existing in Egypt, both those in the urban and rural areas, are the product of successive generations that have been influenced by the contemporary social, economic and political conditions under which they lived.

1-1-2: Until the end of the 19th century, these residences were either luxurious palaces built by the wealthy, who were a few, or big rambling houses in which the head of a family, his sons and their families lived or low houses built of bricks or stone with wooden roofing.

1-1-3: Most of the buildings were owned by people who were careful to live in them because tradition called for every family to live in its own house. Egypt did not know the policy of leasing in a clear form until the first half of the 20th century when many investors employed their money in housing by virtue of its being an investment with guaranteed profit.

1-1-4: In this part of the 20th century and with the development of the social, under the economic and political conditions in the country and with the emigration of numerous families from the countryside to the cities, especially to Cairo where all the means of attraction are present, the housing design developed into investment apartment buildings and many investors proceeded to construct such buildings by virtue of their being a better investment than other types of investment.

1-1-5: Because of the increased emigration from the countryside to the urban areas and the excess in population compared to housing units and, consequently, because of the widening gap between supply and demand, the state started to intervene as of 1954 by building houses for people with limited incomes. However, the state has not been able to meet the housing requirements needed to deal with the increase in the number of families, to absorb the emigrating families, to face the renewal and replacement needs or to deal with the economic development needs, all of which are increasing year after year.

1-1-6: The successive laws issued to fix the rent values, then to reduce them and then to define the relationship between the landlord and the tenant have had their grave impact by causing many investors to refrain from investing their savings in construction, in addition to causing landlords to stop carrying out maintenance work for their houses. All of this is the cause for the presence of many old buildings that get damaged and collapse easily. Our future housing strategy and national policy need to deal with this issue in a fundamental manner so as to preserve and prolong the life of the existing buildings and to maintain the ties of love and peace among all citizens, be they landlords or tenants.

1-1-7: This is why the housing problem in Egypt has become one of the major issues we are facing at present and why the population explosion has turned into a fundamental stumbling block and a major obstacle in the face of the economic and social development efforts. Moreover, the rapid population growth year after year has come to represent the alarm signal for the danger threatening to consume the main part of the national production of the development programs. This growth also

represents an ever-present pressure on the public services and utilities. It is worth noting that the rate of housing unit construction dropped from seven units per 1,000 persons in 1960 to about two housing units per 1,000 persons in 1975.

1-1-8: The matter requires the reappropriation of an ever-increasing part of the national income to just maintain the present standard of services. This reappropriation affects the part that can be channelled toward direct investment in the production projects that led to enhancing the economic growth rates. The big population growth results in an increase in the consumption rate and, consequently, in a drop in the rate of the savings that can be directed toward direct investment in housing.

1-1-9: The Arab Republic of Egypt is devoting special attention and exerting vast efforts in an attempt to formulate fundamental solutions for the housing problem. But despite all these efforts, the problem has grown to such an extent that most families suffer from it in one way or another. This is what motivated the creation of this committee so that it may draw up a national policy that seeks to solve the problem at present and in the future.

## 1-2 Causes of Problem

The housing problem emerges at both the national and local levels as a direct result of the following fundamental factors:

The high population growth rates.

The population's qualitative distribution and its impact on the housing problem.

The high rates of emigration from the countryside to the urban areas.

The population's social and economic dimensions [characteristics] and their impact on the housing problem.

The failure to establish a balanced relationship between the landlord and the tenant--a failure which has caused investors to refrain from employing their monies in housing.

### 1-2-1: Population Growth and Its Impact on Housing Problem

The constant population growth in Egypt, especially in the cities, has a big impact on the housing problem as a result of the subsequent effect of this growth in creating new families in need of new housing. This is in addition to the fact that internal migration has contributed to intensifying the housing crisis in the republic's cities.

By studying the population situation in the republic, it has become evident to us that the republic's population amounted to 38.2 million people in 1976, of whom 37.7 millions live inside the republic, i.e. with an increase of 8.2 million people over 1966. The annual population growth rate in the period from 1966 to 1976 amounted to 2.31 percent compared to an annual growth rate of 2.54 percent in the period from 1960 to 1966--the period experiencing a rapid growth in Egypt's population. However, the current annual growth rate of 2.31 percent is still high and if

the current situation persists, the republic's population will amount to nearly 66.2 million people in the year 2000. This figure will result in the further deterioration of the housing problem in Egypt. However, if it becomes possible to reduce the annual birth rate by one per thousand through the adoption of an effective family-planning policy, the population will amount to about 56 million people only in the year 2000. The population may also amount to 59.6 million people in the year 2000 if the Egyptian woman's childbirth habits are changed to make this woman give birth to two children only.

#### 1-2-2: Qualitative Distribution of Population and Its Impact on Housing Problem

From the distribution of this population over the planning [presumably meaning administrative] provinces, we find that the greater Cairo province contains the largest percentage of the population and that this province's population amounted in 1976 to 9.2 million people representing 25.1 of the republic's total population. This means that one quarter the republic's population exists in the greater Cairo province. This indication has its significance in the planning to solve this problem because greater efforts must be channelled toward solving this problem in the province, especially when we learn that the province population will amount to nearly 17.6 million people in the year 2000. Second in population density is the delta province which includes the governorates of al-Minufiyah, al-Gharbiyah, Kafr al-Shaykh, Damietta and al-Daqahliyah. The population of this province has amounted to 8.6 million people representing 23.4 percent of the republic's total population. The figure is expected to reach 14 millions by the year 2000. Alexandria province is also a province with high population density that needs to have its present and future housing needs dealt with. The 1976 census shows that this province's population amounted to 4.8 million people representing 13.1 percent of the republic's total population. This figure is expected to reach 8.7 million people in the year 2000.

By studying the population distribution in the rural and urban areas, we find that the 1976 census shows that the urban population amounted to 16.1 million people representing 43.9 percent of the total population whereas the rural population was estimated at 20.6 million people representing 56.1 percent of the total population. The housing problem emerges more clearly in the urban areas than in the rural areas. Therefore, most of the concerted efforts must be channelled toward the problem in the urban areas where the problem will intensify year after year as a result of the aforementioned factors.

It is worth noting that this enormous population which is increasing by more than one million people annually lives on an area not exceeding four percent of the republic's total area and that this inhabited area extends along the banks of the Nile River. This makes it necessary to move to new centers outside the [Nile] valley, such as the northwestern coast, the new valley, the Red Sea coast, the Sinai and the High Dam Lake area. This movement must be made on the basis of a profound and deliberate study of the components of life in these areas and on the basis of exerting efforts to develop these components.

The matter also requires the initiation of efforts to draw up comprehensive national planning for the entire republic and regional planning for the various provinces. This work should proceed side by side with implementation of the proposed plan so that the development may take place on sound scientific foundations.

#### 1-2-3: Emigration From Countryside to Urban Areas

The statistical data shows that emigration from the countryside to the urban areas is occurring at high rates and that the urban population is rising steadily as a result of natural increase on the one hand and internal migration on the other. This trend is causing further deterioration in the housing problem, especially in the urban areas. Consequently, it is necessary to establish new centers of attraction, to develop the countryside and to raise its living standard so as to make it desirable to live in the countryside and to curtail emigration from it. As a result of the population growth, the area of cultivable land has diminished due to the encroachment of construction on this land at a rate of nearly 60,000 feddans annually. Should this situation continue, the expansion of construction in the next 20 years will swallow more than one million feddans [of cultivable land]. This calls for diverting construction toward the desert.

#### 1-2-4: Social and Economic Conditions and Their Impact on Housing Problem

A house in the modern sense is the material framework for human interaction. The nature of this interaction depends to a large degree on the structures of this framework with the buildings, open spaces, utilities, services, streets, public parks, recreation spots and markets it contains.

Providing the proper sanitary housing and the well-studied residential environment that takes into consideration the deep-rooted social criteria and cultural customs in both the rural and urban local societies has constituted one of the means [sic] preoccupying the social and economic policy of the developing world generally, and especially a broad segment of this world's societies that cannot find the proper housing and that cannot, with their limited resources, act as a party in the local construction market. These are societies that are experiencing at present fundamental transformations in all the social, economic and cultural spheres. Following is an explanation of these dimensions:

##### A. Income Levels:

The prevalent income levels in the Egyptian society represent a social and economic dimension in the housing problem because families with low income represent more than 50 percent of the families in the Egyptian society. This is due to the low wages and the lack of work opportunities which are reflected in the standard of housing which a family budget can withstand on the one hand and in the widening gap between what the family can shoulder in return for housing on the one hand and the ownership installment or the economic rent value of the house it wants on the other hand.

##### B. Increased Marriage Rate:

Each marriage contract represents an urgent demand for an independent dwelling unit. Statistics indicate that the number of marriage contracts concluded in the republic in 1975 reached 384,000, compared to 339,000 in 1973. The number of these marriages in urban areas in 1975 was 155,000, or 40.3 percent. In rural areas, the number was 229,000, or 59.7 percent. The number of marriages was 10.3 per thousand of the total population in 1975, compared to 9.9 per thousand in 1974, and 9.4 per thousand in 1973. In 1975, marriages were 9.3 per thousand in urban areas, and 13.8 per thousand in rural areas.

### 1-3: Dimensions of Housing Problem

Statistical figures have shown that there are nearly seven million families in the republic, of which 3.2 million families or 46 percent live in urban areas, according to the 1976 census. By comparing the number of families with the number of apartments in the 1976 census, it became evident that there was a shortage of 555,000 apartments. If the required number of apartments needed to meet the population growth by 1980 is added to the aforementioned figure of 555,000 apartments, the present accumulation [shortage] would amount to 831,000 apartments. At the same time, the total number of apartments needed to replace old apartments by 1979 amounted to 393,000 units. The number of units needed to replace old ones by the year 2000 is estimated at 589,000 apartments.

On the basis of the current average family size, amounting to 5.2 members per family, and of an estimate of the number of families in the future and by assuming that an apartment will be made available to every family, then the number of apartments needed to face the population growth from 1976 to the year 2000 is 2.43 million apartments whereas the number needed to face these factors in the period from 1981 to the year 2000 is 2.18 million apartments approximately.

Thus, the volume of the problem is estimated at 3.6 million housing units needed to face the three factors of:

Making up for the current shortage of 831,000 units.

Replacing old units by the year 2000, a figure of 589,000 units.

Facing the population growth from 1981 to the year 2000, a figure of 2.18 million units.

## Chapter Two: Proposed Housing Plan

### Proposed Housing Plan

To meet the required housing volume, estimated at 3.6 million units by the year 2000, it is required that five-year programs be drawn up and put into implementation in the 1981-2000 period. Consideration has been given to starting these programs and plans in 1981 so as to provide the chance for the preparations necessary to undertake the tasks required by the first plan covering the 1981-85 period and to get the lands, utilities and other aspects connected with the housing issue ready. However, the situation also requires that urgent solutions be also drawn up without waiting for cooperation [sic] in order to confront the urgent problem in the 1979-80 period.

#### 2-1: Urgent 1979-1980 Plan:

To make it possible to realize the goals of the urgent 1979-1980 plan, it is proposed that the plan include the following:

2-1-1: Start immediate adoption of all the practical means to prepare an urgent housing program to be implemented during the remaining part of 1979 and during 1980.

This is in addition to exerting efforts to complete all the operations already started, provided that consideration be given in designing the housing units included in the urgent plan to developed housing patterns that are low in costs and efficient to use and provided that the ideal economic method be followed in construction and building so as to make sure that the construction materials required are secured from the sources of wholesale production without the intervention of middlemen. Efforts should also be exerted to reduce costs as much as possible and, consequently, to supply the largest number of housing units possible in an urgent program to meet the requirements of those who are in the direst need of housing.

2-1-2: Give priority to encouraging the construction of more floors atop already existing low buildings with the capacity to support more floors, provided that the additional floors are built properly and according to designs compatible with the capability of the existing building to support these additions.

2-1-3: Prepare a quick executive program to start immediately the construction of housing complexes in the areas close to the population centers and already served by or close to the necessary utilities. This should be done for the low-economy and middle-income housing of both types A and B, provided that preparation of the blueprints for the new housing patterns be started immediately and provided that standard units and patterned models producing a cut in costs be taken into consideration.

2-1-4: Exert immediate efforts to prepare the lands for construction in new and complete population centers in close desert areas that are easy to supply with utilities, especially water and electricity, at the lowest costs possible. These new centers must also be supplied with partially paved roads to make them easily accessible for construction and building activities and to also make it easy to plant trees on the sides of these roads in the future.

Such areas, when trees are planted in them and when attention is paid to the distinctive architectural style that they can be given, can encourage many families with limited income, especially the families looking for a better life or newly formed families, to show big demand for them.

For the beneficiary masses to feel the efficiency of these small-size housing models for their ideal use, it is proposed that models of these houses be furnished according to an economic design providing for beautiful, simple and solid furniture so that it may provide an example for other beneficiaries to follow. It is proposed that these housing units be furnished according to a set pattern and by a furniture cooperative that undertakes this task so that the furniture styles may be compatible with the housing styles and with their efficiency for all purposes.

2-1-5: Start immediate preparation of the lands for the projects of the first phase of the plan contained in the national housing policy until the year 2000 and supply these lands with their utility requirements so that the first part of the lands may be ready with their complete blueprints as of the beginning of January 1981. However, consideration should be given to the importance of the lands' suitability for economic foundation so as to reduce the costs. Tree planting should also be started in the empty spaces so that the trees may grow with the rising buildings.

2-1-6: Continue the programs to bolster and set up plants producing construction materials so that their production may reach the limit compatible with the

construction material needs in the housing construction plans, in addition to the needs of the other construction plans.

## 2-2: National Housing Plan

2-2-1: The proposed plan has been drawn up on the basis of meeting the housing needs in accordance with five-year programs implemented in the period from 1981 to the year 2000. Consideration has been given to a gradual annual increase [in housing construction] compatible with the targeted capacity of the construction sector, with the financial resources, with the construction materials and with the availability of labor. Consideration has also been given in this distribution [sic] to meeting the requirements needed to counter the population growth, in addition to the gradual elimination of the already existing shortages so that the public may feel a tangible improvement from year to year. Consideration has further been given to starting implementation of the proposed plan as of the beginning of 1981, provided that the state efforts be focused in the remaining part of 1970 and in 1980 on meeting the more urgent needs, namely the housing needs of those whose houses have collapsed and those with newly formed families.

This is in addition to gaining the confidence of the private sector and encouraging it to participate in solving the problem by eliminating all the work obstacles facing this sector, making land available, supplying it with the utilities and making construction and labor available, as will be noted later.

## 2-3: Cost of Proposed Housing and Services Plan for 1981-85

This plan provides for the construction of 675,000 housing units, along with the necessary service buildings linked with housing--especially in the new areas not supplied with such services:

Year	Number of Housing Units (in 1,000)	Average Unit Cost (in pounds)	Total in Million Pounds Including Housing and Services
1981	110	4,130	530
1982	125	4,269	602
1983	135	4,387	650
1984	145	4,468	690
1985	160	4,528	770
Total	675		3,243

### Important Observations: High Estimates of Plan Drawn Up on Following Basis:

Adoption of the system of standard units in design and the use of uniform units that bring about a drop in costs, along with innovating the means that realize streamlining the use of the available local resources.

The official prices of the basic materials have been calculated on the basis of the prevalent 1979 prices, especially insofar as the prices of cement, reinforcement iron and wood are concerned.

Taking into consideration development of the building and construction methods to face the ever-increasing needs to implement the plan and strengthening the construction companies by providing them with technical and administrative outfits they need and supplying them with equipment and machinery to speed up the construction process and to reduce the costs.

Securing all the construction materials needed in quantities that meet the plan's demands, in addition to the demands of the other building and construction plans.

**2-4: Estimated Costs of Buildings for 1981 Housing and Services Plan:**

To construct 110,000 housing units with the necessary service buildings connected with them;

Type of Unit	% of Unit	No. of units	Average Area of Unit (in sq. m.)	Average Cost Per Square meter (in pounds)	Total Costs (in 1,000 pounds)	Average Cost of Unit (in pounds)
Low-Income A	20%	22,000	45	45.8	45,342	2,061
Low-Income B	25	28,500	50	53.0	102,025	2,650
Middle-Income A	25	27,500	70	59.0	113,575	4,130
Middle-Income B	12	13,200	80	64.5	68,112	5,160
Above Middle-Income A	6	6,600	100	70.0	46,200	7,000
Above Middle-Income B	2	2,200	120	75.0	19,800	9,000
Total	100%	110,000			395,054	3,591.4

Total Calculated After Addition of 15 Percent in Costs to Meet  
Difference in Costs of Construction in Remote Locations 454,312 4,130,0

**Service Buildings Connected With New Housing Centers and Required Per 1,000 Units:**

Joint elementary school consisting of 20 classrooms and with an area of 1,500 square meters:  $1,500 \times 80 = 120,000$  pounds

650 square meters X120 [pounds] =72,000 pounds. [sic]

Social service buildings and business and craft shops	1,400 sq.m. X80=112,000 pounds.
Main Central Buildings	304,000 pounds.
<b>Grand Total</b>	<b>608,000</b>

Considering that these services will be set up only in new areas, it is estimated that only 60 percent of the housing units will require these services.

110,000 units X608,000 pounds X0.60=40,128,000 pounds. With the addition of a differential to meet the costs of construction in remote areas, the total sum required for implementing the 1981 housing and service plan amounts to nearly 530 million pounds.

#### (e) Estimated Costs of Buildings for Years 1982-85 of Housing Plan

calculated in the same manner outlined in item 2-a, the costs of the buildings in the following years can be estimated at the following:

1982	nearly 603 million pounds
1983	nearly 690 million pounds
1984	nearly 690 million pounds
1985	nearly 770 million pounds

Total costs for all 5 years is nearly 3,25 billion pounds.

Comments on this basis given to raising the estimates for each subsequent year in 1982, in 1983 etc. the possibility of completion and of carrying out some extra work to improve the housing conditions. Consideration has also been given in these estimates to raising the percentage of the necessary service buildings in the last year of the plan because such buildings are scheduled to be constructed in areas remote from the new population centers and in new cities.

#### Chapter Thirteen: Requirements for Implementing Proposed Housing Plan

##### (1) Requirements of Implementing Proposed Housing Plan (1981-2000)

To implement the proposed plan, it is necessary that the following requirements be estimated and supplied:

(a) lands needed to accommodate the housing volume proposed in the plan and the services necessary for it;

(b) utilities necessary for the housing plan and their costs;

(c) development of the construction sector to enable it to undertake the tasks of the proposed housing plan and the other relevant activities;

(d) construction materials necessary for the housing plan and the means to secure them;

(e) sources for financing the first 1981-85 five-year plan.

These points are to the following manner:

##### (a) Land Requirements of Proposed National Housing Plan

(1) To determine the land requirements for the 1981-2000 urban national housing plan, we assume a density of a population density of 25 units per feddan, or 125 persons per hectare; and assuming that the housing requirements by the year 2000 amount to 3.5 million units, then the land requirements amount to 144,000 feddans.

It is required that these needed lands be secured in the following spheres:

- i. Lands within the populated areas in the governorates.
- ii. The proposed construction expansion around the major cities.
- iii. New cities.

(i-1-1): The lands suitable for development in the planned cities, namely the greater Cairo province, the Alexandria province and the cities of Suez, Ismailia, Port Said, Banat Suwayf, Samoud and Asyut, have been estimated at nearly 38,190 feddans.

As for the new cities which it has been decided to build and which total nine cities, namely the cities of 10 Ramadan, 15 May, al-Sadat, al-'Amiriyyah, four cities in the greater Cairo province and the city of New al-Fayyum, the areas of their lands amount 27,650 feddans.

Thus, the total area of the lands calculated so far amounts to 65,840 feddans capable of accommodating 1.6 million housing units. The remaining area needed to implement the 1981-2000 plan is 78,160 feddans. This area can be made available in the locations which will be developed outside the valley.

(i-1-2): According to the studies conducted, the number of units called for in the first plan amount to 675,000 units which require 27,000 feddans.

It is proposed that these lands and units be distributed as follows in the future plan:

Year	Number of Housing Units (in 1,000)	Lands Required (in 1,000 feddans)
1981	110	4.5
1982	125	5.0
1983	135	5.4
1984	145	5.8
1985	160	6.5
Total	675	27.0

In surveying the areas scheduled to be developed in the existing and planned cities during the first five-year plan, it has become obvious that it is possible to secure 17,650 feddans (as part of the 38,190 feddans already referred to).

As for the new cities, it is possible to secure 7,200 feddans during the first five-year plan (as part of the 27,650 feddans already referred to). This means a total of 24,850 feddans.

To make all the lands needed for the first plan available, it is thus required that nearly 8,760 more feddans be secured. These lands can be secured in the other governorates of the valley and in the new areas.

A-1-3) The basic principles for selecting the lands and the elements that must be available:

(1st), the open spaces within the populated areas in the government

these must be selected on the following basis:

A. Their proximity to the utility networks.

B. taking into consideration the population density averages in the areas surrounding them.

C. preserving the cultivable area whenever possible.

anyway, construction expansion around cities

The following must be taken into consideration in selecting these lands:

excluding fundamentally toward the desert lands or the agriculturally unproductive lands.

D. Conducting studies for integration with a city's populated area.

E. Studying the road networks.

F. capacities of the utility networks.

G. conducting studies on the qualities of the soil.

H-1-3) new cities:

The following must be taken into consideration in determining their locations:

A. The feasibility of providing them with utilities economically.

B. Considering studies on the qualities of the soil and the topography of the location.

C. Their proximity to water.

D. Determining the area of each city in the light of a complete study of its economic requirements.

E. Determining utilities required by Proposed National Housing Plan

A comprehensive housing plan is based on constructing 3.6 million housing units over 20 years. It is proposed that 675,000 units be built during the first five-year period.

To estimate the utility requirements, the following principles and assumptions have been formulated:

A. The costs of the public utilities and their requirements will be estimated on the basis of the areas of land needed for the plan, their locations and their population density.

B. A total of 75 percent (20,250 feddans) of the lands required are located within existing developed areas and their expansion and having a population density of 140 persons per feddan, i.e. with a total population of 2,835,000 people.

C. A total of 25 percent of the required lands (6,750 feddans) are located within the new cities and with a population density of 80 persons per feddan, i.e. with a total population of 540,000 people.

This produces a general population density average of 125 persons per feddan.

#### 3-2-2: Immediate Costs of First (1981-85) Plan:

By examining the data and studies received from the state sectors concerned and in light of the estimates on population density and land acreage, it has been possible to conclude the cost per person per utility on the basis of the 1979 prices and the total costs per person in terms of all the utilities (water, sewerage, electricity, roads, transportation and telephones) as follows:

A. A total of 360 pounds per person in the construction expansions within the populated areas.

B. A total of 720 pounds per person in the cities.

Thus, the total costs of the utilities amounts to:

A sum of 1,021,000,000 pounds in the populated areas and their expansions.

A sum of 388 million pounds in the new cities.

This produces total costs of 1,409,000,000 pounds, or nearly 1.41 billion pounds, distributed as follows over the various utilities:

	Costs (in one million pounds)
Roads	324
Drinking Water	238
Sewerage and Drainage	277
Electricity and Lighting	151
Telephones	307
Means of Transportation	112
Grand Total	1,409

#### 3-2-3: Costs of Meeting Existing Shortage:

As a result of the comprehensive studies on the plans and of the data supplied to the committee, it has been possible to estimate the costs of the works needed to

meet the existing shortage in the water, sewerage and electricity utilities--utilities which must be secured to make it possible to provide services to the housing proposed in the 1981-85 five-year plan, in addition to the costs of the immediate plan. These costs have been estimated as follows:

Utility	Costs of Meeting Shortage (in Million Pounds)
Water Utility	400
Sewerage and Drainage Utility	534
Electricity Utility	100
Total Costs of Meeting Shortage	1,034

This figure does not include any sums for the shortages existing in the telephone, transportation and road utilities.

#### 3-2-4: Total Costs of Utilities for 1981-85 Five-Year Plan:

A. Immediate Costs of Various Utilities (Roads, Drinking Water, Sewerage, Electricity, Telephones and Transportation)	In Million Pounds
	1,410
B. Costs of Meeting Existing Shortages in Water, Sewerage and Electricity Utilities	1,034
Grand Total	2,444

In light of the studies on the possibilities of implementation, it is proposed that the grand total be reduced by 10 percent. Thus, the grand total costs of the utilities amounts to 2.2 billion pounds.

#### 3-2-5: Immediate Costs of 1986-2000 Plan:

After addition of the telephone services required according to the authority's [presumably telephone authority] plan, the total costs of the utilities per person in the expansions rise to 460 pounds instead of 360 pounds. Thus, the cost of the utilities in the new expansions amounts to  $87,750 \times 140 \times 460 = 5,651,000,000$  pounds.

The cost of the utilities in the new cities amounts to  $29,250 \times 80 \times 720 = 1,685,000,000$  pounds.

The grand total is 7,336,000,000 pounds or nearly 7.34 billion pounds.

The grand total of the immediate costs of the utilities plan and of the costs to meet the shortage in the first (1981-85) plan thus amounts to:  $2,444 + 7,340 = 9,784,000$  pounds.

This figure does not include the appropriations necessary to meet the current shortage in the telephones, roads and means of transportation.

### 3-3: Estimate of Requirements of Proposed National Plan in Construction Sector

3-3-1: In view of the fact that the volume of construction, including housing, amounts to nearly 45 percent of the development plan's investments, this makes clear the extent of the impact of the construction sector's capability on the economic and social development plans.

Following is a chart of the construction volume and housing volume in 1979 and in the first and last year of the 1981-85 five-year plan:

Year	Construction Volume (in million pounds)	Part Allocated for Housing (in million pounds)
1979	1,000	255
1981	1,230	530
1985	2,220	770

To make it possible to meet the requirements of the ambitious housing plan seeking to build 675,000 housing units from 1981 to 1985, the housing volume in 1981, the first year of the plan, must amount to double the targeted volume this year (i.e. 530 millions to 255 millions).

This volume rises successively during the years of the plan which begins in 1981 with the construction of 110,000 units and ends in 1985 with the construction of 160,000 units.

This explains the importance of starting and speeding up the preparation bolstering and development of the construction sector in the remaining part of this year and in 1980 so that this sector may be able to meet the urgent housing requirements as of 1981 and so that it may, at the same time, be able to meet the construction requirements in spheres other than housing.

The housing policy seeks to develop the role of the private and joint sector in the contracts so that this role may amount to implementing 75 percent of the housing projects with the end of the 1981-85 five-year plan and so that the public sector companies may implement 25 percent of the housing projects, concentrated mainly in the low-economy housing.

### 3-3-2: Present Position of Construction Sector Companies:

The construction companies are divided into:

A. Contracting companies (public sector) controlled by the Ministries of Housing and Development, numbering 29 companies. These companies implement nearly 50 percent of the construction plan (these companies implemented in 1978 a work volume valued at 526 million pounds compared to a targeted volume of 462 million pounds, i.e., with an increase of 12 percent representing the rise in costs).

B. Contracting companies (public sector) controlled by the other ministries and agencies. These companies implement nearly 25 percent of the construction plan.

... contracting companies (private sector) and joint companies. These companies implement nearly 25 percent of the construction plan.

The current position of the public sector contracting companies can be summed up by stating that in their entirety, these companies carry out a work volume that exceeds the targeted volume. However, they face numerous obstacles that pose a threat to the existence of many of them, the most important being the obstacle of the severe shortage in monetary liquidity, the inability to collect the debts due them by others, amounting to 325 million pounds in 1978, and the shortages and bottlenecks in the main construction materials, such as cement and reinforcement iron. The deficit in the capital of these companies is estimated at 46 million pounds.

There also exists a vast disparity between the capabilities of these companies, considering that there are three major companies that carry out 50 percent of the total volume of work implemented by all the companies, numbering 29 companies. Moreover, the net assets of these three companies amount to 63 percent of the net assets of all the companies.

Moreover, the prefabricated housing plants, totaling 11 altogether, have not started practical production yet.

There is no doubt that these conditions must be remedied immediately so that production may be raised to realize the ambitious plans.

As for the private sector companies and contractors, it has become evident that their number amounts to 3,472 companies and contractors, most of them small contractors. A work volume amounting to 320 million pounds was entrusted to them in 1978, in addition to the joint companies. These companies undertake the construction of middle-income, above middle-income and luxury housing, as well as other projects. The volume of the work of the private and joint sector contractors amounts to nearly 25 percent of the total construction plan.

After examination of the method of assigning projects, it is proposed that the methods of bids and of assigning be combined when necessary.

### 3-3-3: Determination of Goals Required of Construction Sector:

The requirements of the construction plans until the year 1985 have been calculated generally, with stress on the requirements of housing in the same period. Following is a summary of these two plans:

Year	1981	1982	1983	1984	1985
Housing Plan	530	603	650	690	770
Construction Plan In Spheres Other Than Housing	700	800	940	1,070	1,770
Total Construction Volume (in million pounds)	1,230	1,403	1,590	1,760	2,220

A detailed study on labor, equipment and material requirements has also been conducted.

#### **Concerning Skilled Labor:**

The skilled labor currently available in the sphere of construction amounts to 250,000 workers. This figure must be raised to reach 600,000 workers in 1985, as will be pointed out later.

#### **Concerning Equipment:**

It is proposed that 600 million pounds be appropriated for developing and bolstering the equipment resources during the 1981-85 plan, provided that the appropriations start with 100 million pounds for 1981 and that they be raised gradually to 140 million pounds in 1985 to meet the requirements of the construction plans (estimated at 1979 prices).

In light of the proposed percentage of the housing levels (55 percent low-economy housing, 38 percent middle-income housing and eight percent above middle-income housing), on the basis of the average prices prevalent at the start of this year and in light of the architectural patterns proposed by the Committee for Housing Designs, the costs of the housing units in the 1981-85 plan have been estimated on the basis of certain percentile distribution between the public and private sector companies. The costs of public service buildings and the proper allowances for remote areas have also been added.

Following is a chart of the estimated costs of the 1981-85 housing plan, taking into consideration the gradual increase in the private sector's share in implementing the housing projects:

Year	1981	1982	1983	1984	1985
Number of Units (in 1,000)	110	125	135	145	160
Public Sector's Share of Housing Plan [presumably in million pounds]	150	160	170	180	190
Private Sector's Share of Housing Plan [presumably in million pounds]	380	443	480	510	580
Total Cost of Plan	530	603	650	690	770
Percentage of Public Sector's Share to Total	28%	27%	26%	26%	25%

#### **(+)4: Developing Construction Sector to Meet Plan Requirements**

For the construction sector to be able to shoulder its part in implementing the plan, it is proposed that the following important measures be taken:

First, regulation of construction companies' activities:

For the construction sector to be able to perform its part in implementing the plan, it is required that:

- A. Balance and equal opportunities be realized in assigning works to the companies so as to make it possible to exploit all the resources and to create competition in order to control the prices through limited bid invitations offered to each group of companies within their field of specialization and their capabilities and in light of the geographic location of these companies' operations.
- B. Participation by the public sector companies in the low-economy housing projects when necessary through direct assignment, provided that the volume of work assigned is compatible with the capability of each company and is in accordance with prices studied in advance.
- C. Bolster capabilities of infrastructure and sanitary works companies.
- D. Encourage the private sector to take part in the finishing work necessary for the housing projects.
- E. Organize the economic units technically, financially and administratively.
- F. Correct the capital of the public sector companies and strengthen them financially.
- G. Set up a stable central national construction agency and determine its powers to make them compatible with the requirements of implementing the construction plans scientifically.

Second, development of construction methods to raise productivity:

It is necessary to develop the performance regarding the quarrying, land survey, soil research, soil works, concrete and iron works, bindings, building works and finishing works.

Special stress must be laid on mechanization in construction work and coordination must be established among the research, designing, manufacturing and building agencies. The importance of mechanization as a basis for the development is underlined in view of the expected labor shortage compared to the volume of the plan.

Coordination among the research, designing, manufacturing and building agencies should be established through drawing up standard specifications for all construction and complementary work, through taking maximum advantage of the available local [constructional] materials and raw materials and through developing the tile industry and the plastics industries for the production of electrical appliances, bathroom appliances and sanitary appliances in order to do away with importation gradually.

This is in addition to raising productivity through a scientific management of the work, through developing the wage system and through paying attention to the controls necessary to realize a balance in these wages. It is also necessary to set standard performance rates and to pay attention to the cost [accounting] systems and to the controls necessary to curtail the rise in prices.

### Third: prefabricated buildings industry:

As for the 11 plants for the production of prefabricated houses that are owned by the companies of the Ministries of Housing and of Development and that have cost 60 million pounds, their entire work is based on producing large size and heavy supporting walls. The operation of these plants has been started and their production is still very limited in comparison to what was targeted for them.

From reviewing the system of producing supporting walls, it has become evident that this type of production is highly costly in comparison to other types, in addition to the presence of obstacles that face these plants.

### Fourth, labor:

As for skilled labor and craftsmen in the construction sector, a complete plan has been proposed to meet the requirements of the current phase, to overcome the existing shortage in craftsmen, to provide specialized training to prepare supervisory and executive elements and to outline the forms of international cooperation in this sphere.

Following is a summary of this plan:

Year	1979	1980	1981	1982	1983	1984	1985
Skilled Workers Needed for Plan (in 1,000)	300	350	420	480	450	600	660
Number of Instructors Needed to Provide Training	700	1,000	1,400	1,400	1,400	1,400	1,400
Total Financial Requirements of Plan (in million pounds)	10	16	16	13	8	8	8

It is proposed that the construction training setup controlled by the Ministry of Development be bolstered and developed or that it be turned into a public authority with full powers to supervise and develop the training activity so as to meet the plan's requirements, to study the labor market in the Arab and African states and to take part in linking technical and university education with the actual needs of the construction sector.

### 3-4: National Plan's Requirements of Construction Materials

3-4-1: The percentage of construction materials in construction components varies according to the type of project. At the general average, this percentage amounts to the equivalent of 30 percent of the construction investments in the plan and nearly 45 percent of the construction investments in housing. Perhaps this makes clear the special importance of the materials which affect directly implementation of the national plan generally and of the housing projects in particular. As a result of the presence of numerous bottlenecks in construction materials in recent years, there has been extreme instability in the programs for the implementation of projects and, consequently, schedule overruns. It can be said as an estimate that

the construction capacity could have been raised by no less than 15 percent if the construction materials had been available at the right time.

One of the main factors causing the emergence of those bottlenecks was the failure to provide the investments necessary to preserve the capacity of the plants producing the main and predominant materials, such as iron, cement and cinder blocks, not to mention the failure to secure the investments necessary for the expansions needed to increase production to meet the rising requirements of the development plans. As a result of this situation, the state has incurred big financial burdens in free currencies to import the needed materials. This trend will continue for a while and until the replacement and expansion projects for the production of various materials are carried out.

#### 3-4-2: Estimate of Areas of Housing and Service Buildings in 1981-85 Plan:

On the basis of an average housing unit area of the various types of housing scheduled to be built according to the proposed plan, the total acreage for housing, in addition to the acreage needed for the services required by this housing, has been calculated and the figures have amounted to what is shown in the following chart:

#### Total Acreage for Housing and Services in 1981-85 Plan:

	1981	1982	1983	1984	1985
Total Area In Square Meters, Including Area for Services	6,610,000	7,510,000	8,110,000	8,710,000	9,620,000

#### 3-4-3: Estimate of Volume of Construction Materials Needed for 1981-85 Five-Year Housing:

To estimate the volume of the needed materials, the main construction materials needed for constructing 100 square meters of housing and service buildings have been calculated. By applying these calculated figures to the areas and buildings already defined, the quantities of the basic materials necessary for housing construction during the years of the plan have been estimated. The volume of these basic materials amounts to the following:

Material	Unit	Volume in Millions				
		1981	1982	1983	1984	1985
Gravel	Cubic meters	2,664	3,004	3,244	3,484	3,848
Sand	Cubic meters	2,975	3,280	3,650	3,920	4,330
Cement	Tons	1,322	1,502	1,622	1,743	1,924
Reinforcement Iron	Tons	0,152	0,173	0,186	0,200	0,221
Cinder Blocks	Units	594.0	676.0	730.0	784.0	866.0 [sic]

### 3-4-4: Study on Construction Materials Situation:

The construction materials situation has been studied in three groups as follows:

A. First group, namely the natural construction materials including sand, gravel, natural stones, basalt, granite and marble.

These materials are available in abundance in numerous parts of the country. However, the major part is still produced in primitive manual methods and it is necessary to begin the use of modern mechanized means of quarrying, whether in terms of breaking, cutting, shaking [sic] or transportation, so as to acquire products with qualities compatible with the standard specifications, that help to raise the standard of implementation and that improve the economics of operation, especially in regard to the use of reinforced cement which requires good gravel of various sizes.

B. Second group, including the main manufactured materials including reinforcement iron, cement, cinder blocks, wood, lime, gypsum, glass, clay piping, non-metal sanitary appliances, porcelain tiles, ceramics, cast iron piping and galvanized iron piping.

A survey has been conducted on the production volume and consumption volume of these materials. The current production, in addition to the [future] production of the projects under implementation and the projects on which agreement has been reached will be enough to meet the plan's requirements of all materials, except for reinforcement iron, cement, wood, cinder blocks and cast iron piping.

Following are the details concerning these materials:

#### 3-4-5: Reinforcement Iron:

This material is not just one of the predominant materials in the construction industry but is also one of the general strategic materials. It has become evident from the statistics that there will be a constant shortage in the production of reinforcement iron throughout the years of the plan. The shortage will be as follows:

Index	In 1,000 Tons						
	1979	1980	1981	1982	1983	1984	1985
Total Local Production	280	325	325	385	528	965	1,155
Requirements	624	690	760	837	920	1,000	1,105
Shortage or Surplus	-344	-365	-365	-452	-392	- 35	+ 50

The currently available steel rolling [al-darfallah] capabilities will start production at full capacity as of 1982 and will realize maximum capacity in 1982 as a result of the start of production by the fourth furnace in the Steel and Iron Complex.

Another increase in production will appear in 1984 as a result of the new al-Dakhilah project and without the addition of any new production lines to the existing plants. It is worth noting that there was a plan for a new project in al-Sadat City--al-Khatatibah previously--with a production capacity of 400,000 tons. Work on this project was stopped due to the shortage of stocks ('urug) in the production of the Hulwan plants.

In view of the fact that the costs of local production are still lower than the price of imported iron, it is required that the expansion projects be reconsidered and expedited, especially since the fourth furnace in the Iron and Steel Complex has been put into operation and has added 600,000 tons to the annual production capacity. It is required that the project for the production of rolled iron in al-Sadat City, with its annual production capacity of 400,000 tons annually, be expedited. This should be done in addition to implementing the steel and iron complex in al-Dakhilah (a project with a production capacity of 700,000 tons annually). Consideration should also be given to adding new iron rolling lines to the existing plants.

It is to be noted that an imported ton of reinforcement iron costs nearly 350 dollars at present whereas the investment required to produce a ton of this kind of iron is 1,000 [figure as published] dollars only.

#### 3-4-6: Cement:

Cement is the overwhelmingly predominant material in the construction industry generally and in housing in particular. The cement industry in Egypt is one of the old industries in which we have formed numerous specializations and experts. However, in the past 10 years, the investments necessary to preserve or enhance the capacity of the existing plants to meet the needs of the development plans and to produce a surplus for exportation have not been available.

The following chart shows the production, requirements, shortage and surplus in the 1979-1985 period:

Index	Volume in Million Tons						
	1979	1980	1981	1982	1983	1984	1985
Total Production of Plants	3.600	4.500	5.950	9.010	11.650	15.150	15.600
Demand	6.432	7.072	7.432	8.064	8.760	9.488	10.312
Shortage or Surplus	-2.832	-2.572	-1.483	+0.946	+2.890	+5.662	+5.288

In view of the importance of planning for this vital commodity, it is proposed that stress be laid on the following elements influencing the cement industry:

At this sound economic situation requires that a general plan be formulated for the location of the new cement plants, taking into consideration the availability of raw materials, consumption areas, environmental protection and transportation potentials. The proximity of plants to populated areas affects not only man's health but

also affects crops. Moreover, such proximity adds a heavy burden which the road networks cannot handle.

B. It is necessary to continue implementation of the projects for which contracts have already been concluded and the new expansion projects according to the schedules agreed upon because it is noticed that there has been a delay in implementing the current projects. Such delay results in enormous financial burdens. In 1979, a million tons valued at 100 million dollars at the import price were calculated [sentence as published].

C. Postpone scrapping [takhrid] any of the furnaces currently in operation when production reaches the point of exceeding the local consumption needs because these furnaces, despite their low productivity, still produce cement at a much lower cost than that of imported cement.

The investment required to produce a ton of cement amounts to nearly 150 dollars at the current prices.

#### 3-4-7: Cinder Blocks:

Cinder blocks are the basic material for the construction of walls. The main variety produced so far is still the red brick. Before construction of the high dam, the production of this variety of bricks depended mainly on the silt carried by the Nile River flooding. This source has been cut off now and, consequently, the brick plants have resorted to scraping off top soil from cultivable lands or to gathering this type of soil from the islands in the Nile River. Such practices pose a grave danger to the agricultural resources and to the fertility of the soil.

The tendency to produce alternatives to red bricks in the preceding period has been very slow and this has led to the serious present situation which must be tackled with all the means possible.

The construction of plants producing calcareous sand bricks and clay bricks as alternatives to red bricks has started recently. The following chart shows the production of the various types of bricks, the demand volume and the shortage in the 1979-1985 period:

Index	Volume in One Million Bricks						
	1979	1980	1981	1982	1983	1984	1985
Total Production of All Types	2,389	2,574	2,978	3,365	5,340	3,665	3,705
Demand	3,152	3,465	3,642	3,951	4,292	4,649	5,053
Deficit	763	891	664	586	752	984	1,348

It is evident from this chart that there will be a serious shortage in production throughout the years of the plan. Considering that it is unreasonable to import bricks from abroad and that the mere transportation of bricks for long distances internally is uneconomical, it is necessary to expand the production of brick alternatives, the most important being:

A. Red bricks for which the raw materials are abundantly available in the various parts of the country.

B. Calcareous sand bricks for which the raw materials are also easily available in most of the governorates.

C. Gypsum blocks and slabs as a by-product of the gypsum plants.

Initially as production is concerned, the production that will be turned out by the existing red brick plants after they are developed to use desert clay instead of clay from cultivable lands has also been taken into account. The inclination toward this development must be encouraged with all the means, including facilitating the financing necessary for the private sector plants to introduce this development. These plants produce 1.8 billion bricks annually. The investment necessary to produce 10 million bricks from desert clay amounts to one million pounds whereas investment necessary to develop the local red brick plants amounts to nearly 100,000 pounds for every 10 million bricks.

#### Wood - 87/88

The industry depends fundamentally on importing the wood necessary for various kinds of usage. The 1978 consumption amounted to 950,000 cubic meters of various kinds of wood which can be divided into three categories:

(1) First category: this category concerns the types used in construction work and industry, the wood used for bindings [al-shaddat] and scaffolding in which the (lifriji, white, litzana and muski) veins are used.

(Second category): this category concerns the types of wood used for the production of doors and windows and building requirements for which the (muski), Swedish, (ambari) wood and timber are used.

(Third category): concerns the types of wood used for furniture, including bamboo, (shayya), (shayya) and various types of veneer. There are other types of wood such as (bul-sabha), Turkish walnut wood, oak wood, mahogany, (al-tabk), (al-'azizi) and (zirhany) wood etc... These are types of wood used for various special purposes.

In addition to (shayya) and plywood, they are also used in wood bindings and in the production of some types of inexpensive windows and furniture. The local (woodworking capacity) of these types of wood is as follows:

Wood Plant in (Al-Sakaka)	9,000 tons
Wood Plant in (Almaruf)	6,000 tons
Furniture Wood Plant in (Rawi Ambari)	13,000 tons
Carpeted Wood Plant in (Ambari)	10,000 tons
	38,000 tons

and it is planned soon to raise the capacity of these plants by 58,000 tons. But it is an urgent priority to exert efforts to develop these plants and to treat (their products) with special chemicals to expand their uses and to enhance their durability.

it is expected that the total requirements of the 1981-85 plan of the various kinds of wood will amount to nearly 6.5 million cubic meters (i.e. an average of 1.3 million cubic meters annually).

it is necessary to exert efforts to produce local alternatives to the imported kinds of wood, such as metal bindings instead of the (filirian) veins, aluminum windows and partitions instead of wooden ones and alternatives for other uses.

#### 3-4-9: Cast Iron Piping:

This type of piping is used for sanitary drainage works. Even though many countries have begun to produce plastic piping as an alternative, this kind of production has not been introduced in Egypt on a broad scale yet. Cast iron piping is produced fundamentally by the plants of the Cairo Metal Products Company, the Delta Steel Company and al-Nasr Cast-Iron Products Company, in addition to a number of small private sector companies. The following chart shows the production and the requirements throughout the years of the plan:

Index	Volume in 1,000 Tons				
	1981	1982	1983	1984	1985
Total Production (Public & Private Sector)	21	24	27	28	29
Requirements	30.9	35.1	37.95	40.8	45
Deficit	9.9	11.1	10.95	12.8	16

Enough cast iron piping is imported at present to make up for the annual deficit in production. It must be noted that the production of some companies in the private sector does not meet the specification, that it is produced in primitive ways and that the use of this production results in damage to buildings. Therefore, it is necessary to give consideration to raising the production of the existing plants whose products meet the standard specifications in order to make up for the apparent deficit.

The investments needed to produce a single ton of cast iron amount to 500 dollars.

#### 3-4-10: Floors [al-ardiyat]:

It is proposed that the production of Canaltex Company and of the private and joint sectors be raised to reach one million square meters annually as of 1985. This requires an investment of 4.8 million pounds, of which 3.3 millions are in foreign currency.

#### 3-4-11: Paints:

The country still imports the needed volume of paints exceeding the local production. The following chart shows the total local production, the requirements and the annual deficit during the years 1979-1985:

[No Unit Given]

Index	1979	1980	1981	1982	1983	1984	1985
Total Production	22,500	30,000	32,500	32,500	32,500	32,500	32,500
Requirements	29,250	33,640	38,700	44,490	51,170	58,840	67,670
Deficit	6,750	3,640	6,200	11,990	18,670	26,340	35,170

It is proposed that the deficit be made up for through encouraging the private and joint sectors to set up plants for the production of paints, varnish and (ratinjat), keeping in mind that the average investment needed for the production of a single ton [of paint] amounts to nearly 360 pounds.

#### 3-4-12: Miscellaneous:

What is meant here are the various metal pieces necessary for the operation [sic] of windows and doors. (Sabi) Company turns out nearly 80 percent of local production and the rest is produced by small and scattered shops in the private sector.

It has been impossible to survey this miscellaneous production or the volume imported. However, the initial figures indicate that to meet the major part of the plan's requirements, it is necessary to double Sabi's production. It has actually become evident that this company has the potentials for such expansion. An investment of 3 million pounds, 20 percent of them in local currency, is needed for this expansion. This investment should start with an appropriation of one million pounds in 1980.

#### 3-4-13: Requirements in Sanitary Appliances:

The country is experiencing big difficulties as a result of the failure of the locally produced sanitary appliances to meet the standard specifications, especially faucets and flush tanks that get damaged quickly, thus causing an excessive water consumption and the subsequent abnormal pressure on the sanitary sewerage networks and damage to installations.

Sabi Company is one of the few sources that produce these requirements according to the standard specifications. However, the company's production of these types of appliances, amounting in value to 200,000 pounds in 1978, represents only a very small part of the requirements. The rest is produced by small plants and foundries owned by the private sector. These plants and foundries often fail to observe the standard specifications.

Therefore, Sabi's production must be raised in accordance with the discussions held with the company's management. The production of certain essential kinds of appliances must be raised to meet all the local needs.

#### 3-4-14: Glass:

The state is still importing to meet its annual needs of glass. The following chart shows the annual production and the country's needs during the years of the plan:

Production	Volume in 1,000 Tons						
	1979	1980	1981	1982	1983	1984	1985
Shubra al-Khaymah Plant		23	23	23	23	10	20
10 Ramadan Plant (New)	=	=	=	=	30	60	75
Total	23 [sic]	23	23	23	53	70	95
Country's Needs	51	54	57.5	61	65	69.5	85
Deficit or Surplus	-28	-31	-34.5	-38	-12	+0.5	+10

To produce the glass needed during the years of the plan, it is necessary to make the appropriations necessary to implement the new glass production project in the 10 Ramadan City--appropriations amounting to nearly 70 million pounds, of which 40 millions are in foreign currency--to make it possible to meet the country's needs and to stop importation.

3-4-15: The investments needed to produce the main construction materials have been increased. The increase has included the projects under construction, the projects under study and the projects needed to meet the plan's requirements.

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